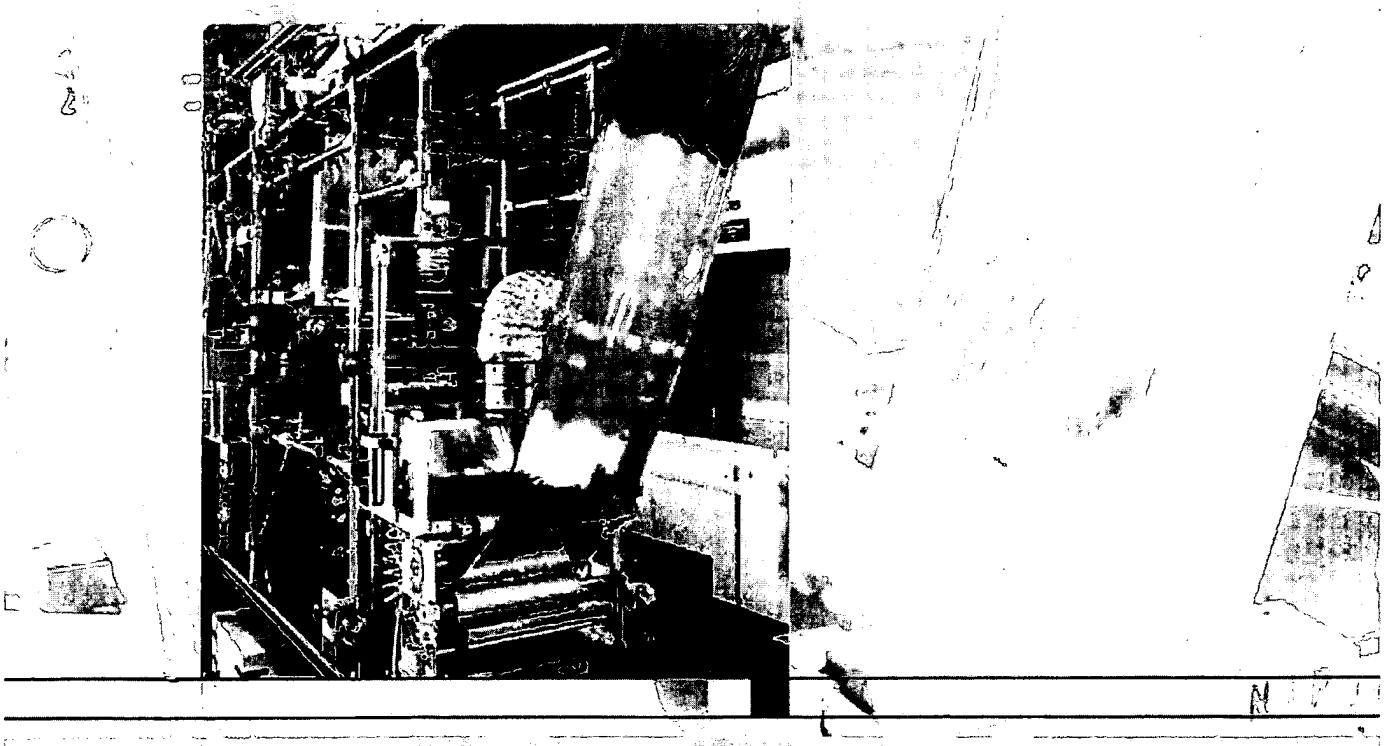
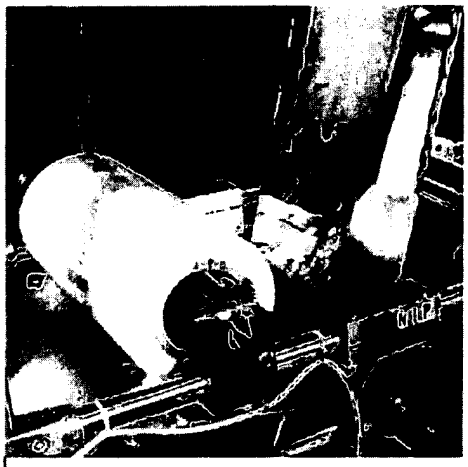
ExxonMobil Chemical

Lamination



RK Print-Coat Laboratory Lamination and Printing Line,
European Technology Center



RK Print-Coat Laboratory
Lamination and Printing Line
European Technology Center

Technical specifications	
Gravure coating head (Industry standard for solvent-based adhesives)	
Gravure offset coating head	
Maximum web width	305 mm
Width of the applicator rolls	280 mm (gravure coating) 265 mm (offset gravure coating)
Two air drying ovens	
Heated lamination nip	
Maximum line speed	20 m/min
One corona treating station	
Inner diameter of the cores to be used	76 mm

A peristaltic pump can supply the solvent-based adhesive to the coating head to allow production of longer reels with tight coating weight distribution.

Testing facilities

Test **> FILM CHARACTERIZATION**	
Seal performance	Hot tack Seal initiation temperature Seal strength Seal through contamination
Adhesion strength	
Barrier properties	Water vapor transmission rate (WVTR) Oxygen transmission rate (OTR)

Conversion factors
From mm to inch multiply by 0.03937
From inch to mm multiply by 25.40

Testing facilities

Mechanical properties	Tensile properties Puncture resistance Coefficient of friction (COF) Elmendorf tear

Test
> GRADE (& FILM) CHARACTERIZATION

Odor & off-taste (Sensory evaluation)	

> Form, Fill & Seal line
Seal performance
Seal integrity
Packaging speed
Sealing window

The purpose of multi-layer film structures is property association of different components in order to optimize the packaging performance.

> Polyethylenes: sealing performance & package integrity, consistent COF, mechanical properties and good organoleptics

> Substrates: aluminum foil, (metallized) OPET, OPP, OPA
Barrier: moisture, gas/oxygen, aroma and light barrier
Packaging appeal: printing, stiffness

The three main processing categories for producing flexible multi-layer structures are:

> Blown film or cast film co-extrusion
> Extrusion coating, with either mono or co-extrusion coating
> Lamination process

Lamination

VARIOUS LAMINATION TECHNOLOGIES

- Adhesive lamination
  by means of an adhesive layer, applied onto one of the substrates prior to combination.
- Extrusion lamination
  a molten polymer web (mostly polyethylene) serves as a tie layer.
- Thermal (or heat) lamination
  by melting the adhesive layer(s), either by heated rollers or an (IR) heated oven prior to combination.

Adhesive and extrusion lamination are the most commonly used processes in today's packaging business.

- Main advantages
  flexibility to produce different structures (short runs)
  possibility to use non-polymeric substrates
  protection of printing against abrasion

REQUIREMENTS FOR LAMINATION STRUCTURALS

- Good sealing performance: package integrity & high line speeds on packaging lines
- Appropriate COF and COF consistency: smooth converting and packaging operations
- Comply with food law or health-care requirements where applicable
- High barrier properties: long shelf life of packed products
- Good mechanical properties

ADHESIVE LAMINATION

Wet bonding: the 2 webs are combined while the adhesive is still wet. This limits the process to applications in which one of the substrates is porous enough to allow the adhesive solvent to escape.

Dry bonding for non-porous substrates which can not be wet bonded

- Adhesives types
  polyurethane-based adhesives
  polyether-based adhesives
  polyester-based adhesives
  polyether / polyester-based adhesives
  acrylic adhesives

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